

ABSTRACT OF THE DISCLOSURE

Induction voltage command  $E_m^*$  is obtained from inverter's primary frequency command  $\omega_1^*$  and torque boost voltage commander produces torque boost voltage command  $\Delta V_z^*$  in accordance with  $\omega_1^*$  while integrator produces reference phase command  $\theta_d^*$ . uvw/dq converter detects motor excitation current  $I_d$  (equivalent of no-load current). Next, deviation of excitation current limitation level command  $I_{dmax}^*$  and detected  $I_d$  is inputted to limiter processing unit to produce torque boost voltage compensation value  $\Delta V_c$  for varying  $\Delta V_z^*$  so that  $I_d$  is smaller than or equal to  $I_{dmax}^*$ . Inverted  $\Delta V_z^*$  is set up as a lower limiter value of the limiter processing unit. Next,  $\Delta V_c$  and  $\Delta V_z^*$  are added to produce final compensated torque boost voltage command  $\Delta V_t^*$  and  $\Delta V_t^*$  and  $E_m^*$  are added to produce q-axis voltage command  $V_q^*$  of the inverter output voltage.